



Synthesis, Crystal Structure and Anti-Liver Tumor Activity of a Novel Inorganic-Organic Hybrid Supramolecular Compound

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SUMMARY. A new inorganic-organic hybrid supramolecular compound based on polyoxometalates (POMs) formulated as $[\text{HAg}(4,4'\text{-bipy})_{1.25}][\{\text{Ag}(4,4'\text{-bipy})_{1.25}\}_2\{\text{HAIW}_{12}\text{O}_{40}\}]\cdot\text{H}_2\text{O}$ ($4,4'\text{-bipy} = 4,4'\text{-bipyridine}$) (**1**) has been prepared under hydrothermal conditions and characterized by IR spectra, elemental analyses, X-ray powder diffraction (XRPD), and single-crystal X-ray diffraction analyses. The compound **1** consists of $\{\text{Ag}(4,4'\text{-bipy})\}$ complexes and $[\text{HAIW}_{12}\text{O}_{40}]^{6-}$ polyoxoanion. The polyoxoanions and the TMCs are linked forms a 1D-chain like structure. In addition, the antitumor effects of the title compound **1** was studied on three human liver tumor cells (Hep G2, SMMC-7721 and BEL-7404). The results showed that compared with the positive reference drug carboplatin, compound **1** displayed efficient antitumor activity.

RESUMEN. Un nuevo compuesto supramolecular híbrido inorgánico-orgánico basado en polioxometalatos (POMs) formulado como $\text{HAg}(4,4'\text{-bipy})_{1.25}[\{\text{Ag}(4,4'\text{-bipy})_{1.25}\}_2\{\text{HAIW}_{12}\text{O}_{40}\}]\cdot\text{H}_2\text{O}$ ($4'\text{-bipi} = 4,4'\text{-bipiridina}$) (**1**) se ha preparado bajo condiciones hidrotérmicas y caracterizado por espectro IR, análisis elemental, difracción de rayos X en polvo (XRPD) y análisis de difracción de rayos X de un solo cristal. El compuesto **1** consiste en complejos de $\{\text{Ag}(4,4'\text{-bipi})\}$ y $[\text{HAIW}_{12}\text{O}_{40}]^{6-}$ polioxoanión. Los polioxoaniones y los TMC están unidos formando una estructura de cadena 1D. Además, se estudiaron los efectos antitumorales del compuesto **1** en tres células tumorales hepáticas humanas (Hep G2, SMMC-7721 y BEL-7404). Los resultados mostraron que en comparación con el fármaco de referencia positivo carboplatino, el compuesto **1** mostró una actividad antitumoral eficaz.

KEY WORDS: liver tumor cells, POMs, X-ray.

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